

Emergency nurse's perceptions of hospital facility support and disaster preparedness

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ABSTRACT

Disasters cause material losses, morbidity, and deaths. Support for the role of hospitals and health workers, especially nurses, is needed to reduce the number of victims in each disaster. Using a cross-sectional survey design, this study aims to analyze the relationship between nurse's perceptions of hospital facility support and disaster preparedness. One hundred sixty seven respondents were selected using proportional random sampling. Disaster preparedness evaluation tool (DPET) was used to assess the participants' readiness, and the Health Sector Self-Assessment Tool for Disaster Risk Reduction was used to assess nurse's perceptions of hospital facility support. The final results of the analysis using the Spearman Rank test showed a significant correlation between hospital infrastructure support and emergency nurse's preparedness in disaster preparedness with a p-value (0.00). The higher the nurse's perceptions of hospital facility support, the higher their preparedness in disaster management is. Strengthening guidelines of disaster planning in hospitals, especially regarding the ability of hospitals to overcome the impacts of disasters, will provide optimal support for emergency nurses during a disaster crisis.

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1. INTRODUCTION

The number of catastrophic crises has been increasing globally [1]. Disasters have resulted in high mortality rate, huge economic losses, and non-functioning public facilities funds due to infrastructure damage [2]. In Asia, in the last five years, disasters have caused the death of 44,836 people and 1,317,527 injured and an estimated 600 million people affected globally [3].

In Southeast Asia, Indonesia is the only country that has very high disaster risks [4]. Geographically, Indonesia, crossed by the world's large plates, has high disaster risks [5]. West Nusa Tenggara is one of Indonesian regions vulnerable to disasters [6]. Natural disasters that can potentially occur in West Nusa Tenggara are volcanic activities, floods, earthquakes, forest fires, drought, and landslides [7]. One of major disasters in West Nusa Tenggara is earthquakes that occurred in mid-2018 [8].

Good disaster management for rescuing victims and rehabilitation depends on the role of hospitals and health workers [9]. In the health care sector, nurses play an important role and will be at the forefront of every disaster emergency response [10]. However, several studies have revealed that the preparedness of nurses is still low and most nurses are not confident in responding effectively to every disaster [11].

Nurses do not know their role in disaster management [12]. Availability of functional facilities such as availability of internal circulation and interoperability, availability of basic equipment and supplies, hospital emergency management guidelines, hospital emergency management guidelines, operational plans for internal and external disasters, safety and security systems (hospital alarms), hospital transportation, communication, and information management networks, Hospital Emergency Operations Center, human resource training and monitoring and evaluation are very important points in preparing hospitals for disasters [13]. Health cluster resilience, especially hospital resilience, is very important because it minimizes the impact of disasters on the society and the resilience of officers in disaster management preparedness, especially emergency room nurses [14]. Better preparedness indicates the ability to provide effective emergency care in disaster situations [15]. Poor disaster preparedness at the hospital level is known to cause poor patient outcomes, officers' frustration and fatigue, and overall system disruption [16]. Previous studies also suggested that reserve resources must be immediately distributed to meet the surge of patients in the emergency room during a disaster response [17]. For this reason, the study aims to analyze the relationship between the perceptions of emergency room nurses and the additional capacity of hospitals with an increase in nurse preparedness in disaster management.

2. RESEARCH METHOD

2.1. Study design

This quantitative study employed cross-sectional survey and was conducted at the emergency department of 11 hospital in West Nusa Tenggara region. It involved 163 respondents recruited using probability sampling with proportional random sampling techniques. They were emergency nurses who have worked for more than one year and were willing to become respondents. Before the study began, ethical approval was obtained from the Ethics Committee of the West Nusa Tenggara Province General Hospital with the number 070.1/05/KEP/2020.

2.2. Instrument

Dependent variable data were collected using the disaster preparedness evaluation tool (DPET) designed by Tichy et al [18]. This instrument is designed for assessing nursing practitioners' specific knowledge and skills regarding disaster/post-disaster preparation, response, and management. This study used 38 items from 45 question items to assess nurse's perceptions of their preparedness to respond to natural disasters. The Pearson Product Moment validity test results from $r > r$ table and Cronbach alpha reliability that the researchers obtained showed a value of 0.965 so that the research instrument was very validity in this study. This questionnaire used Likert scale from 1 to 6 (Strongly Disagree to Strongly Agree). The nurses perception of hospital facility and infrastructure support using the Health Sector Self-Assessment Tool for Disaster Risk Reduction was adapted from WHO [19] consisting of two indicators of the availability of adequate health facilities and logistical availability of 10 questions with Likert scale with a range of answers 1 to 6 (Strongly Disagree to Strongly Agree). The Pearson Product Moment validity test results from $r > r$ table and Cronbach alpha reliability that the researchers obtained showed a value of 0.930. Therefore, the research instrument could be applied in this study. Both of these instruments have been translated into Indonesian using backward translation of Brislin [20].

2.3. Data analysis

Research data were analyzed using IBM SPSS Statistics 26.0 software with a significant value of 0.05. Demographic data of the respondents are presented in the form of frequency distributions. To assess the relationship between independent and dependent variables, the Spearman rank correlation test was used.

3. RESULTS AND DISCUSSION

From the results of the analysis, the following demographic data were found. Most nurses were male (61.7%); most of the respondents were aged 26-35 years (81.4%) and they were married (84.4%). The majority of respondents had worked for 5 years and under (56.3%), and most respondents had a college degree (50.3%). This is more than 50% of respondents had never attended disaster training while 37.7% had attended the training. There are 50.9% of the respondents had experience in previous disaster response while 49.1% had no previous experience in disaster response. Table 1 shows the characteristics of respondents based on socio-demographic. Table 2 shows the minimum, maximum, mean, and standard deviations in the Nurses Perception of Hospital Facility Support and Disaster Management Preparedness. Table 3 shows the relationship, direction and strength of the relationship between Nurse's Perception of Hospital Facility Support and Disaster Management Preparedness.

Table 1. Socio-demographic characteristic of participants (n= 167)

No	Characteristics	Frequency (n)	Percentage (%)
1	Gender	103	38.3
	Men	64	61.7
2	Age		
	≤ 25	12	7.2
	26-35	136	81.4
	36-45	16	9.6
3	> 45	3	1.8
	Level of education		
	Diploma of Nursing	82	49.1
	Bachelor of Nursing	84	50.3
	Master	1	0.6
4	Years of work		
	≤ 5 years	94	56.3
	5-10 years	57	34.1
	11-15 years	13	7.8
5	> 15 years	3	1.8
	Training experience		
	Not	104	62.3
6	Yes	63	37.7
	Previous disaster response experiences		
6	Not	82	49.1
	Yes	85	50.9

Table 2. Distribution of respondents by nurse's perception of hospital facility support and disaster management preparedness

Variable	n	Min	Max	Mean	Std. deviation
Nurse's perception of hospital facility support	167	24	60	43.57	7.99
Disaster preparedness	167	90	234	160.17	28.46

Table 3. Results of bivariate analysis of independent variables with dependent variables

Variable	n	Correlation coefficient	p-value
Hospital facility support	167	0.591	0.000

3.1. Nurse's perception of hospital facilities support and respondent disaster management preparedness.

The results in this study indicate that the respondents' perceptions of hospital facilities has a mean of 43.57 with a standard deviation of 7.99, while for the respondents' perception of preparedness has a mean of 160.17 and a standard deviation of 28.46. This shows that the ability of emergency nurses at the Government Hospital in West Nusa Tenggara in perceptions of hospital facility support is at a moderate level. In terms of preparedness, their values are also at a moderate level.

3.2. Correlation of hospital facility support with disaster management preparedness.

The analysis of the relationship between hospital facility support and disaster management preparedness produced a correlation coefficient of 0.591 with a p-value of 0.000. Therefore, it can be concluded that there is a positive and significant (unidirectional) relationship between infrastructure support and disaster management preparedness. It can be said that the better support of facility is followed by the increase in disaster management preparedness. On the other hand, the lower support of facility is followed by the decrease in disaster management preparedness.

4. DISCUSSION

The meaning of hospital facility support in this study is nurse's perceptions of the hospital facility and infrastructure support in improving nurse preparedness in disaster management. These findings indicate that the support of infrastructure is closely related to the preparedness of emergency nurses at the Government Hospital in West Nusa Tenggara in disaster management. It can be said that the better support of infrastructure is followed by the increase in disaster management preparedness, and conversely the lower support of infrastructure is followed by the decrease in disaster management preparedness. The findings in this study are in line with previous findings by Hammad et al. [17] suggesting that when the hospital disaster plan is activated, backup support resources are immediately distributed to support services in the emergency room, both in the form of medical equipment, medicines to additional personnel for supporting the sustainability of services during disaster response.

Hospitals and other health facilities are vital assets for the community, especially when disasters occur. Dealing with a large number of patients exceeding normal operating capacities, it is inevitable for hospitals to respond effectively to disasters [21]. One problem that has preoccupied the disaster planning team in health care is measuring readiness for hospital surge capacity [22]. As health service centers, hospitals must ensure adequate facilities and infrastructure to support all patient services that can run well. This may be fulfilled when the condition is normal. However, when a disaster occurs, the health care facility may be damaged and unable to provide the usual level of service to new patients; existing patients may need to be evacuated to safer places [23]. Important logistic services such as gas, electricity, water supply, and some digital systems may be disrupted and hospitals may experience an increase of patients from people seeking care and protection after the incident [24]. Rearranging hospitals, especially emergency rooms, is needed when disasters occur. Changes in service scenarios from pre-disaster to emergency response are urgently needed. For example, services that were inside the building were not possible to be carried out during a disaster [25]. Working in a crisis will cause a lot of stress on nurses because they have to deal with a large number of patients. Nurses must also be required to use resources effectively and efficiently [26]. This certainly encourages the hospital management or the government prepare and make a good mitigation strategy so that when a disaster occurs, logistical readiness and hospital infrastructure are ready to be used in serving disaster victims [19]. Maximizing regional resources by building networks or coalitions to facilitate the formation of agreements with stakeholders to maintain hospital resilience in the event of a disaster is one of the efforts to increase hospital reserve capacity [27].

A recent study revealed that there are still many hospitals unable to meet the required capacity when a disaster occurs. This is because the amount of funds allocated for purchasing equipment is. There is a lack of coordination between hospital response mechanisms [28, 29]. For this reason, pre-disaster planning and management of equipment for coordinating resources are essential for the success of a patient care disaster response so that it can improve the preparedness of medical staff, especially nurses working in emergency rooms as the frontline of health services in hospitals [30]. As health service centers and referral centers when a disaster crisis happens, hospitals are required to participate in the development of an emergency operation plan that includes communication, safety and security, resources and assets, response procedures, and the ability to increase staff responsibility to always be ready to provide services to affected communities [31].

5. CONCLUSION

Increasing the hospital's additional capacity is very important so that the staff always get full support in handling victims when a crisis occurs. Hospital capacity planning programs in preparing for future crisis conditions should be supported by hospital owners and directors. This will certainly motivate all staff, especially nurses who work at the forefront of hospital services, such as in the emergency department. In this study, the researcher recommends that the guidelines should be strengthened to regulate hospital planning and improve the support for facilities and infrastructure to deal with future disaster crisis conditions.

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